

PATHWAYS

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The Development of Programmes for Academically Gifted and Talented Children in the Middle School

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Gifted students can also be classified as 'handicapped'. They are handicapped because they get bored in class with the regular type of teaching. In order to satisfy their urge for challenging problems, it is necessary for teachers to feed them with enriching exercises.

How This is Possible

It is suggested that a small group of gifted students are identified from Class VI and either in a Zero Period, Hobby or Club Period, the teachers can organise activities for them. It would be a good idea to involve senior students to run the programme under the guidance of the teacher.

Exercises to Identify the Gifted Students

Since there are no commonly prevalent standardised and scientific means of identifying gifted children in our school system, it is suggested that the teacher should use her own innovation in devising suitable methods. A few suggestions are given below :

Exercise 1

Using the shape of a square $\square$ as part of your figure, compose any 3 figures you like.

Exercise 2

List six innovative uses for an umbrella.

Exercise 3

Fill in the blanks and use the words to make up your own story.

— a —	— e —	toy	— ad
t —	a —	ra —	— ing
a — d	— ed	— at	— — ng
b — d	— og	d — y	b —

These may not be definite methods of identification, but they would certainly help a teacher in locating the 'spark' in a child.

Listed below are some of the characteristics and special needs of gifted students. Gifted students may or may not be high achievers.

1. Gifted students are usually
 - * more self-sufficient
 - * more dominant
 - * more concerned for freedom from supervision than others.
2. They seem to score high on
 - * tests of originality
 - * imagination
 - * resourcefulness
 - * inventiveness
3. They excel in their tendencies to
 - * see relationships among concepts
 - * criticise logical arguments
 - * originate ideas
 - * think through complex problems
 - * free their ideas from the confinement of their surroundings
4. Their cognitive characteristics are evident in their
 - * imaginative writing
 - * extensive vocabulary
 - * sharp observational skills
 - * well developed reading and memory skills
 - * aptitude in both convergent and divergent thinking
 - * unusual ways of dealing with their environment

At the Springdales Teachers Centre a series of four programmes was organised in 1986. These exposed teachers to a variety of exercises in mathematics, science, thinking skills and language, suitable for gifted children of middle school classes. In these articles I hope to share these ideas with the readers of PATHWAYS.

Mathematically Gifted Students

- * These students possess a ready swiftness in reasoning and in the ability to switch the direction of their mathematical thought.
- * They therefore, find a method of solution at once.
- * This seems to be not so much a learned ability, as an almost innate characteristic of their cognitive processing.
- * They abbreviate reasoning, omitting intermediate links in the process.
- * Quick and comprehensive generalisation is the hallmark of the problem-solving capacity of these students.
- * They deal with more abstract than concrete particulars.
- * The mathematical solution of a problem is the feature that captures the attention of the gifted.
- * They display flexibility of thought—leading to economy of thought. Usually they find the clearest, the easiest and the most logical solutions.

- * They tend not to tire when working on mathematics.
- * They see a host of seemingly non-mathematical phenomena through a mathematical prism.

In designing programmes designed to capitalise on the characteristics of the mathematically gifted, the following points would prove useful.

- * The programmes must take on a character, quite typical of usual classroom instruction.
- * Curricula need to be broader, more in-depth and more flexible.
- * Instructional programmes must be structured to provide an environment suitable to independent pursuit of mathematical topics.
- * They should have scope for flexibility and generalised thinking—problems selected should be divergent and open-ended.
- * Opportunities for in-depth exploration of topics should be given and enough time should be given for the same.
- * Encourage students' discovery of mathematical relationships in the abstract.
- * The exercises should encourage students' refinement of their particular talent in the exploration of those topics.
- * When independent study is pursued, teachers will need to offer encouragement and expertise while following a judicious policy of non-interference.

Readers would agree that many of the above points are valid even in other areas of study. It is therefore incumbent on those who create and implement programmes for the gifted to remain ever watchful of the potential cognitive benefits that can characterise each of the programme's options.

Finally, a word of warning. Some teachers tend to avoid encouraging talented students because they are not confident of being able to have the answers to all their queries. It is really not necessary for the teacher to know the answers to all questions. They can always try to find out the answers; they could treat it as a joint learning effort and, in fact, they could also learn from the students.

It is therefore most important that the teacher has an open mind about the programmes to be undertaken and he/she should try and make it a **SUCCESS**. I would welcome comments, suggestions and ideas from readers.

EXERCISES IN MATHEMATICS

I. Pattern Gazing

- Complete the table and find the pattern. Write down the general formula. One example has been done for you.

Series	No. of Addends	Sum
1	1	1
1 + 3	2	4
1 + 3 + 5	3	9
1 + 3 + 5 + 7	4	16
1 + 3 + 5 + 7 + 9	5	25
1 + 3 + 5 + 7 + 9 + 11	6	36
1 + 3 + 5 + 7 + 9 + 11 + 13	7	49

Look at the 2nd and 3rd columns.

$(1)^2 = 1$; $(2)^2 = 4$; $(3)^2 = 9$; $(4)^2 = 16$; $(5)^2 = 25$; $(6)^2 = 36$; $(7)^2 = 49$. If the number of addends is 'n' then the sum is 'n²'

Therefore, the General Formula is that if there are 'n' addends then the sum is 'n²'

b.	Series	No. of Addends	Sum
	2	1	2
	2 + 4	2	6
	2 + 4 + 6	3	12
	2 + 4 + 6 + 8	4	20

Can you find a way of finding the sum without adding each term? If so write your general formula.

c.	Series	No. of Addends	Sum
	1	1	1
	1 + 2	2	3
	1 + 2 + 3	3	6
	1 + 2 + 3 + 4	4	10

After completing this table, compare its 3rd column with that of the table b. Can you see any relationship? If so, write your general formula.

II. Multiplication Ladders

These are multiplication ladders. On either side the numbers 0 to 9 are listed from top to bottom as shown. On the left are the **multiplicands**. These are to be multiplied by the **multiplier**—the number written on top of the ladder. From the products only the units digit is to be recorded. Draw straight lines joining the multiplicand with the units digit of its corresponding product. Observe the pattern obtained. Fig. A below is an example using 9 as a multiplier.

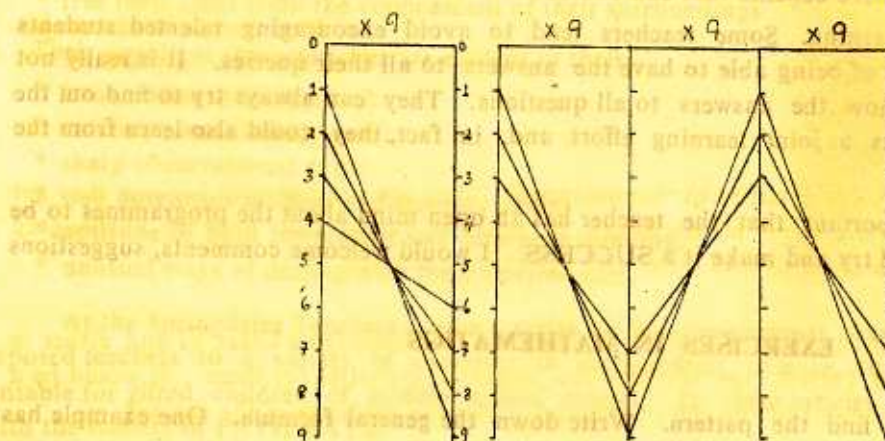


Fig. A

Fig. B

By repeating the process several times and placing the ladders side by side, beautiful geometrical patterns are obtained. Fig. B shows how this is done. To help in understanding, the calculations are partially shown below. Remember only the units digit is recorded in each product.

1st Ladder

$$\begin{aligned} 9 \times 1 &= 9 \\ 9 \times 2 &= 18 \\ 9 \times 3 &= 27 \\ 9 \times 4 &= 36 \end{aligned}$$

and so on.

2nd Ladder

$$\begin{aligned} 9 \times 9 &= 81 \\ 8 \times 9 &= 72 \\ 7 \times 9 &= 63 \\ 6 \times 9 &= 54 \end{aligned}$$

3rd Ladder

$$\begin{aligned} 1 \times 9 &= 9 \\ 2 \times 9 &= 18 \\ 3 \times 9 &= 27 \\ 4 \times 9 &= 36 \end{aligned}$$

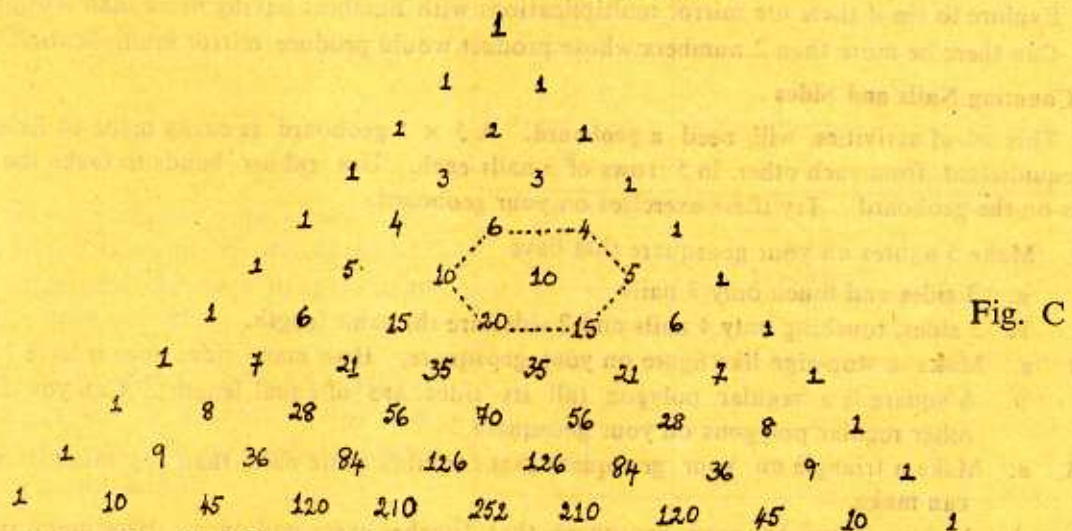
Complete figures A and B

Now try drawing multiplication ladders for 3, 5 and 4. What happens if the multiplier is 0? Guess what the pattern will be before actually joining the numbers.

III. PASCAL'S PATTERNS

Pascal was a famous mathematician and philosopher, who gave to the world great mathematical ideas. His greatest contribution was the PASCAL'S TRIANGLE which is given here, (Fig. C). This can go on endlessly.

Study this carefully, and list down the various patterns you see.



Hexagons are six sided figures. Several hexagons can be formed from the numbers in the triangles. One is shown by the dotted lines in the figure. Look at those hexagonal numbers. Can you juggle with these numbers, trying your hand at addition, subtraction and multiplication. Do you see any pattern? Try with other hexagonal numbers to see if the same rule applies.

IV. Hunting for Elusive Primes

No one has developed a formula to generate prime numbers, but there is some pattern in the appearance of primes and their exploration does lead to some intriguing discoveries.

Underneath you can see a modified Sieve of Eratosthenes, a 12×9 array. Circle all the primes and then cross out their multiples. For example, after circling (2) cross out all its multiples.

1	(2)	3	4	5	6	7	8	9	10	11	12
13	14	15	16	17	18	19	20	21	22	23	24
25	26	27	28	29	30	31	32	33	34	35	36
37	38	39	40	41	42	43	44	45	46	47	48
49	50	51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70	71	72
73	74	75	76	77	78	79	80	81	82	83	84
85	86	87	88	89	90	91	92	93	94	95	96
97	98	99	100	101	102	103	104	105	106	107	108

What is the quickest method of generating primes above? Do you notice any pattern emerging in the location of the primes?

If not, then shift the first column to the right side of the array, such that 13 follows 12 and now after circling the primes and crossing out their multiples you can clearly see a pattern emerging in the position of the primes relative to their neighbouring numbers.

V. Mirror Multiplication

Look at this multiplication :

$$48 \times 42 = 84 \times 24$$

Reversing the digits does not change the product.

Can you find pairs of numbers between 20 and 30; 30 and 40 which produce mirror multiplication ?

Explore to see if there are mirror multiplications with numbers having more than 2 digits ?

Can there be more than 2 numbers whose product would produce mirror multiplication ?

VI. Counting Nails and Sides

This set of activities will need a geoboard. A 5×5 geoboard is easily made by fixing small nails equidistant from each other, in 5 rows of 5 nails each. Use rubber bands to make the various figures on the geoboard. Try these exercises on your geoboard.

1. Make 5 figures on your geosquare that have

- 3 sides and touch only 3 nails
- 3 sides, touching only 4 nails and 2 sides are the same length.

2. a. Make a stop-sign like figure on your geosquare. How many sides does it have ?

- A square is a regular polygon (all its sides are of equal length). Can you make any other regular polygons on your geosquare ?

3. a. Make a triangle on your geosquare that contains more nails than any other triangle you can make.

- Make a figure on your geosquare that touches every nail once. How many sides does it have ? Make a figure with more sides than anyone else, can.

4. Find these nails on your geosquare.

(3, 3) (0, 2) (2, 3) (3, 4) (0, 4)
(4, 0) (4, 4) (1, 4) (0, 0) (1, 1)

Connect these nails and record the figure formed in each case.

a. (2, 2), (2, 3), (3, 3), (3, 4)

b. (1, 2), (1, 3), (2, 2), (2, 3)

c. (1, 1), (2, 1), (2, 3), (3, 1)

d. (1, 2), (1, 3), (2, 4), (3, 3)

e. (1, 2), (2, 1), (2, 3), (3, 2)

f. (0, 1), (0, 2), (0, 3), (1, 1), (2, 1), (2, 2)

g. (1, 2), (1, 3), (2, 1), (3, 2)

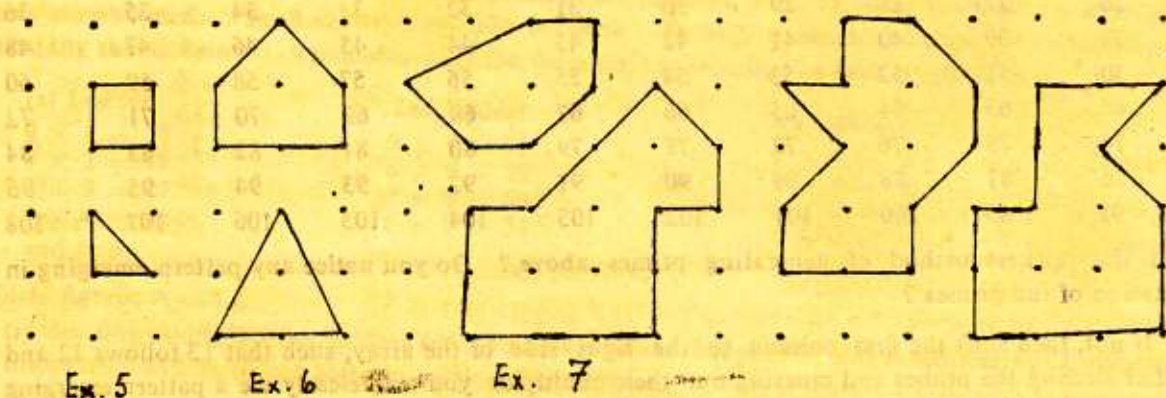


Fig. D

5. PIC'S FORMULA

Make some figures that have no nails inside. See Fig. D. Keep a record on your paper of the number of nails touching the figure and its area. Write down the rule.

figure	nails touching	area
A	3	$\frac{1}{2}$
B	4	1
C	5	
D	6	
E	7	

6. a. Make some figures with 1 nail inside. See Fig. D. Keep a record of the nails touching and the area of your figure. Write down the rule.

- b. Make some figures with two nails inside. Keep a record of the nails touching and the area of the figure. Write down the rule.

figure	nails touching	area
A	4	2
B	5	3
C	6	
D	7	

7. You should have three rules from the last 3 exercises. Put these rules together.

- For no nails inside
- For one nail inside
- For 2 nails inside

Combine these rules to make one "super-rule" that will give the area for any figure by counting the nails inside and counting the nails that touch the figure.

Find the area of the four figures given in fig. D by using your 'super-rule'.

8. How many different sized squares whose corners are touched by nails can you construct? Make a chart of the number of squares and their area.
9. Construct the figures named below on your geosquare so that each has the specified area. Copy out the table and in each column enter 'yes' if you can make the figure, or 'no' if it cannot be made.

Area	1	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	and so on	$10\frac{1}{2}$	11	12	13	14
Triangle												
Square												
Rectangle (not a square)												
Parallelogram (not a rectangle)												
Trapezoid												

10. AN INTERESTING PROBLEM

Can you divide the figure shown in Fig. E into four shapes of the same size and area?

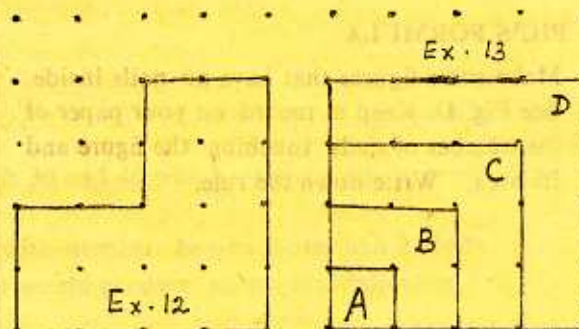


Fig. E

11. FUNCTIONS

Make the 4 squares shown in Fig E on your geosquare. The next 4 exercises are based on them. Fill in this table and find the rule.

square	nails	area
A	4	1
B	8	
C		
D		

12. Find the rule for this pattern

square	unit on a side	area
A	1	1
B	2	4
C		
D		

13. A. How many nails do you add to the pattern when you enlarge the square? What is the function for nails added?

B. Put 4 geosquares together and continue the pattern. Does the function change?

square	units on a side	area
A	1	4
B	2	5
C	3	
D	4	

Contd. on page 11

The Effective Use of Bulletin Boards

(This article formed a part of the report on a Competition on Visual Displays in Primary Classes held by the Ramjas Teachers' Centre in November 1986.)

All teachers, especially those who work in primary classes, realise that attractive, interesting bulletin boards make an enormous contribution to the "atmosphere" in the classroom and the interest shown by the children in their work. I was privileged to be one of the judges at the competition mentioned above and would like to share with readers some of the many thoughts and ideas that arose while we were looking at the large number of excellent entries. This takes the form of the hints given below, which I hope will help teachers.

Some General Hints on Bulletin Boards

1. Before you actually start putting up the material on the board, it might be helpful to plan and draw a rough sketch of the lay-out. The space available to you for your display is fixed and this sketch will help you decide.
 - * if you can use all the material you have collected, or some of it is to be altered or discarded,
 - * if the material should be vertical or horizontal ie—how will it be read by the viewers?
2. The overall visual impact of your display must capture the child's attention and interest. Obviously the colour scheme will play a major role. Bright colours look appealing. If you are using only one/two colours, consider how they will look against the background colour of the bulletin board. Explore the possibilities of using several shades of one colour. A border does enhance the neatness of your display but isn't always necessary. Remember the edge of a paper, if in a contrasting colour to the background, can itself become a frame. To save time use strips of paper, ribbon, or a thick felt pen to make your border. Sometimes you can merely draw lines at four or two opposite corners to make up a frame.

Explore the possibilities of using more than one kind of material—paper of many kinds and textures, cloth and wool/string/ribbon, thermocole, cardboard, grass or straw etc. You could even sometimes use actual objects like soap wrappers, toothpaste cartons, small bottles and tins, labels etc.

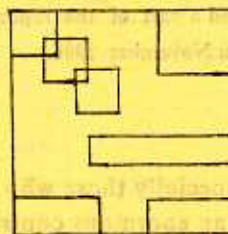
The use of small pockets or boxes which stand out from the board is an easy way to obtain a 3-D effect. Paper cut-outs mounted on thermocole give a similar 3-D effect for figures, written panels etc. If you have difficulty getting thermocole, look for small stiff paper boxes (from medicines) or even cardboard shapes with "legs" which hold them away from the board.

3. When you plan your lay-out think of ways of mounting the material in an interesting manner.

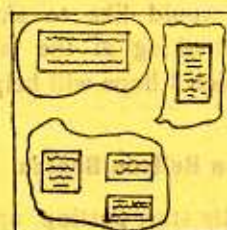
A series of square or rectangular boxes placed end to end is not as attractive as.



boxes of varying sizes, placed at varying angles, and sometimes overlapped. Remember empty spaces are also necessary.



Another interesting idea is to use coloured paper cut-outs in odd shapes as frames on which written/pictorial material is mounted. The latter could be on conventional square/rectangular sheets.



You could also write directly on white paper cut-outs of such shapes. Lightly drawn pencil lines would be useful as a guide.

4. Writing on bulletin boards (whether for children or adults) must be **LARGE**. It needs to be visible at some distance. Readers should not have to step right up to the board to get the message.

A simple way of writing in big letters is to use a broken crayon placed sideways on the paper. Running hand or print letters made this way are large, broad and you can even get variations in the shading. Avoid using fine felt-tipped pens and spending hours filling colour into big letters. Use broad felt-tip markers, if you need to, and write directly on the paper.

Stencilled letters have gaps in them which must be closed, specially for young children. Remember to leave enough gap between words if you are using a stencil.

Write labels and headings on strips; cutting up single letters is time-consuming.

Use a different colour to emphasise important words/facts and headings. Use arrows and lines to show linkages/sequences between words or sentences in your display.

When fixing the written material on the board adjust its height and size to suit the readers for whom you intend it. Obviously a class V child can look up higher than a class II child-but neither should have to crane his/her neck to read.

5. The content—namely the number of facts or concepts—presented in a single display must be limited to suit the space available. Too many ideas can result in a cluttered look which loses its impact.

Decide in advance what your purpose is. Do you wish to revise known facts? If so, it is usually adequate to remind students of the main points only. Leave them to revise details from the text book.

Do you wish to present new facts, extend their learning beyond the routine lesson? How can you stimulate the children to find out more on their own afterwards?

Select words/sentences (i. e. written text) which can be easily read and understood by the students. Make sure there are no grammatical or spelling errors. Perhaps you could ask a colleague to help by spotting such mistakes, before you put up the material.

6. When you find an interesting display idea in a book or magazine, don't copy it blindly for your bulletin board. First think about its suitability for Indian children—the class that you teach. Are the words or pictures familiar in Indian homes/situations? Can the ideas be adopted? Sometimes just Indianising the faces of the people is enough—the words can stay the same. Sometimes pictures of Indian places etc., must replace those in the original theme.

7. An ideal display is one to which children come back repeatedly. They should not just read it once and go away. This means you have to think of questions, activities etc., based on material you have displayed. Perhaps answers could be displayed in subsequent weeks. In some cases it may be possible for the display to develop from week to week—some material being replaced by new material while retaining continuity and links with the theme.

8. One last point. Teachers are busy people with limited time, and yet bulletin boards have to change fairly frequently. So plan simple displays in which you do not waste time putting up too much material. Work out material in panels which can be easily fixed, stored and re-used for future classes. Use cut-outs repeatedly for mounting varied material.

How much of the display material must be made by you? How much can be made by children? Often children's work can be easily and effectively assembled to make attractive displays.

Gayatri Moorthy

—Contd. from page 8

14. How many square units do you add when you enlarge the square? Make a table on your paper. Fill it in and find the rule or function.

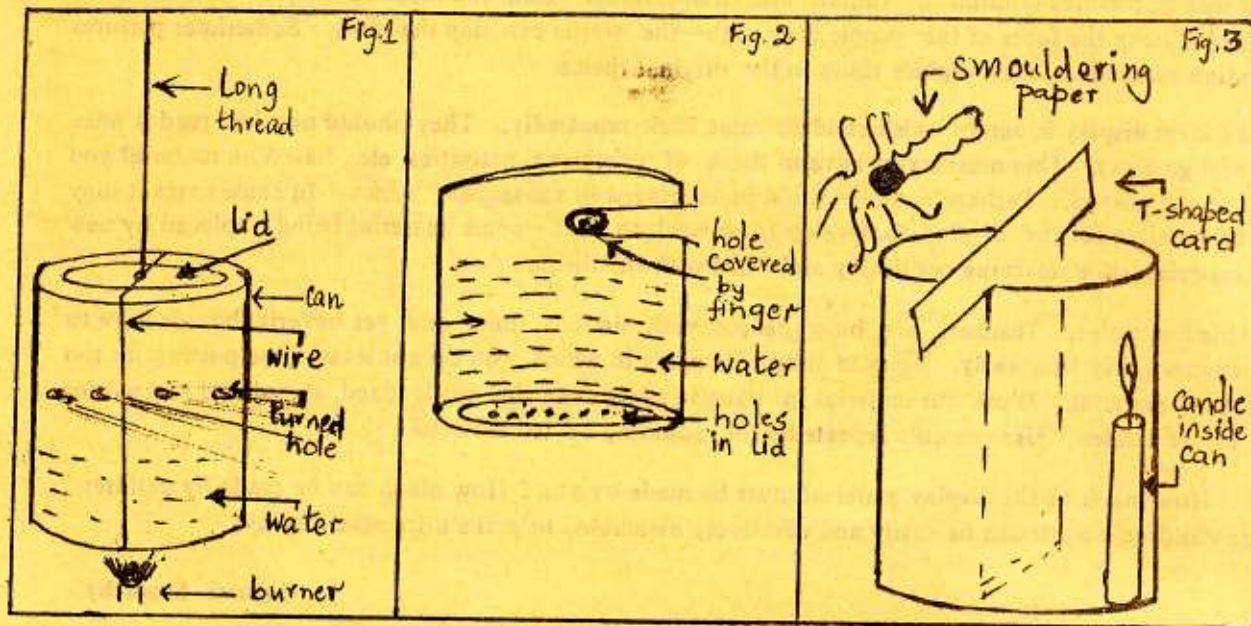
square	units on a side	area increase
A	1	1
B	2	3
C	3	
D	4	

[Readers would be interested in the article titled "Test Your Creativity" by Patrice Horn in the Reader's Digest of November 1986—Editor.]

TIN-CAN EXPERIMENTS-I

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The experiments which are described in this series of four articles are easily set up. All of them are based on the use of empty tin-cans and other easily available material like thread, hammer and nails, paint etc. Simple laboratory equipment like stands, burners and thermometers are however needed. The principles illustrated by these experiments are mostly taught in the middle and senior school. The experiments provide students with opportunities to work with their hands, make observations and form their own conclusions. They could also be set up as demonstrations.



1. AN ACTION-REACTION STEAM TURBINE

Take an empty coffee tin and tie it with a string as shown in Fig 1. With a nail make two holes opposite to each other on the curved surface of the tin. Bend the holes with the nail in the same direction (clock-wise). Pour some water into the can and close it tightly with the lid. Suspend the can from a high point using a long thread. Heat the can from below using a burner and wait till the steam comes out of the holes. (The holes should be bent so that steam jets come out tangential to the curved surface).

What do you observe? What is the direction of steam jets coming out of the can? What is the direction of motion of the can?

2. THE EFFECT OF AIR PRESSURE

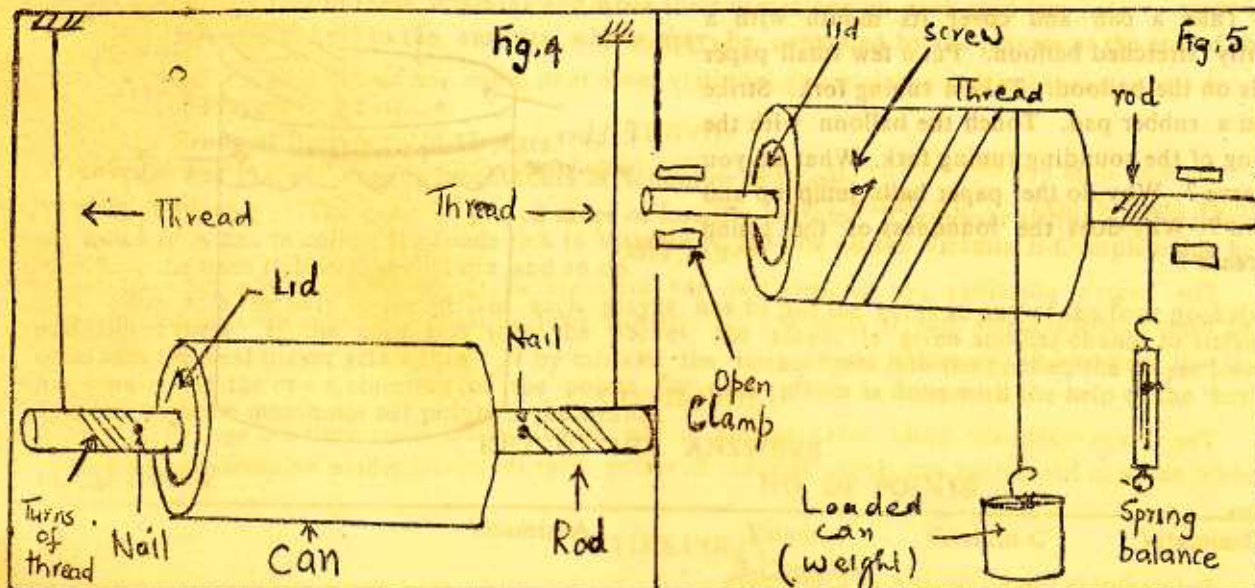
Take a tin can and make many holes in its lid. Make a small hole on the curved surface of the can near its bottom. See Fig 2. Fill the can with water, blocking the hole tightly with your finger. Close the can tightly with the lid. Invert the can, keeping the hole still closed with your finger.

What do you observe? Remove your finger from the hole in the can. What happens now? Put your finger on the hole again. What do you observe now?

3. CONVECTION CURRENTS

Take a can and fix a candle in it near its curved surface as shown in Fig. 3. Make a T-shaped piece of cardboard. Put this T-shaped piece in the can as shown. It will divide the can into two parts. Bring a smoking paper near the candle side of the can. In which direction does the smoke move ?

Put the smoking paper at the other end now. In which direction does air which carries the smoke move ?



4. CONSERVATION OF ENERGY

Take a tin can and make two holes in it, one at the centre of its bottom and the other at the centre of its lid. Pass a glass rod through the holes and fill the can with moist clay. Put the lid in place and allow the clay to dry.

Put rubber tubing on the exposed parts of the glass rod. Tie a thick cotton thread tightly on each side of the rod. Suspend the can from stands as shown.

Roll the can up so that the thread gets wrapped around the rod. Allow the can to roll down. Wait and see what happens.

What do you observe ? What energy did the can have at the top position ? What energy did it change to when it was rolling down ? Why did it go up again ?

5. A WHEEL AND AXLE

Take a can and make two holes, one at the centre of the lid and other at the bottom. Pass a round wooden stick through the holes to act as a rolling axle. Fill the can with wet clay and let it dry. Drive a nail into the curved surface of the can and another nail into the stick.

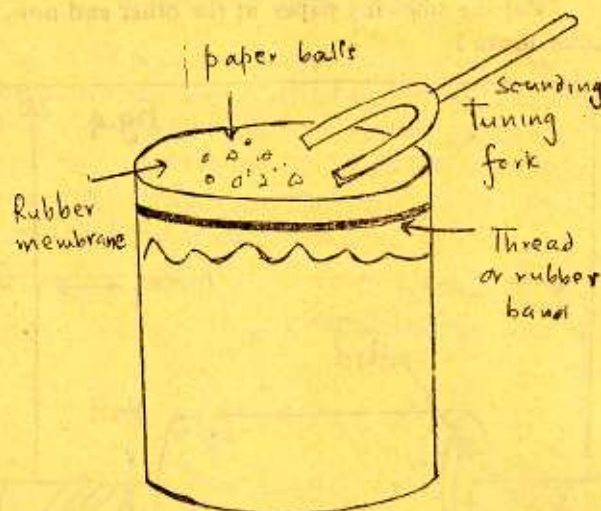
Tie a weight (1 kg) to the nail on the can using a thick string. Tie another string to the nail on the stick. Wrap the thread round the stick a number of times and tie a spring balance to the other end.

Support the can on two stands as shown. Do not clamp the axle so that it remains able to rotate. Pull the spring down. What is the reading of the spring balance when it is being pulled

down? In which direction does the one kg. weight move when the spring is being pulled down? What is the ratio of the weight lifted and the spring balance reading (effort applied)? What is the ratio of the diameter of the can (wheel) and the stick (axle)? Move the spring balance by 25 cm. How much distance does the weight move? What is the ratio of these two distances? Do you observe any relation between the ratios calculated?

6. VIBRATIONS PRODUCE SOUND

Take a can and cover its mouth with a tightly stretched balloon. Put a few small paper balls on the balloon. Take a tuning fork. Strike it on a rubber pad. Touch the balloon with the prong of the sounding tuning fork. What do you observe? Why do the paper balls jump up and down? Why does the loudness of the sound increase?



“Look Around and Learn” Environmental Studies Kits for Stds. I & II

Each activity-based kit containing activity cards and worksheets for children to work on, has been developed and published by the Teachers Centre, Springdales School, Pusa Rd., N. Delhi-5. These kits disperse with the Social Studies and Science textbooks for the class, and children do not also have to buy separate notebooks. The Teachers' kit which contains the entire set plus teacher's guide material costs Rs. 100/- for Std II & Rs. 70/- for Std I. The children's worksheet files cost only Rs. 15/- each. The kits are full of exciting, useful activities, integrating the subjects, developing language, mathematics and creative skills and creates an awareness of the environment in the children. The Std I kit focusses on 'Me & My School' and the Std II kit on 'My Neighbourhood'. Progressive-minded schools that are using these kits find in them the answer to a novel approach to teaching. Schools interested in introducing these kits may contact. Mrs. S. Sundarrajan Director, Teachers Centre, Springdales School, Pusa Road, New Delhi 110005.

NUTRITION BOARD

(A Game for Children)

Material : A complete set of carrom striker, coins and board, pencil, paper, paints and brushes.

Preparation : On the four sides of the carrom board, write the names of four nutrients, that is, Vitamin-A, B-Complex, C and D.

On the coins paste a disc of paper on one side. On this pasted paper draw and paint the various food stuffs rich in these Vitamins and write their names one on each coin (see list).

Also prepare a 'key' to the answers which may be consulted by the players at the end of the play.

No. of Players : 2 to 4.

Age Group of Players : 10-15 years.

Time and Place : During lunch hours at school or at home.

Method of Playing : The game is played more or less like carrom. The player sitting on the side of say Vitamin A has to collect the foods rich in Vitamin A, the one on the Vitamin B-Complex side has to collect the ones rich in that Vitamin and so on.

Now with the help of the striker each player has to put the coins in any of the four pockets, and collect them. If the coin gets into the pocket, the player is given another chance to strike; otherwise the next player gets a turn. If by mistake the striker gets into the pocket, the player loses five points. In the end a counting of the points for each player is done with the help of the 'key'. The one with the maximum net points is the winner.

KEY TO THE ANSWERS

FOOD STUFF

NO. OF POINTS

	Vitamin-A	Vitamin B-Complex	Vitamin-C	Vitamin-D
<i>Amla</i>	1	2	15	0
Butter	8	0	0	13
Cabbage	5	3	8	0
Carrots	4	2	2	0
Cheese	7	4	0	8
<i>Dalia</i>	1	4	0	0
Egg	6	6	0	15
Fish liver oil	15	0	0	20
Fermented <i>atta</i>	1	10	7	0
Ghee	5	0	0	13
Germinated pulses	2	8	13	0
Guava	0	3	13	0
Lemon	0	5	5	0
Liver	8	8	3	15
Mangoes	5	4	3	0
Meat	2	4	0	7
Milk	7	6	1	7
Papaya	3	5	6	0
Peanuts	1	5	0	0
Potatoes	1	2	3	0
Radish leaves	6	5	7	0
Spinach	6	5	8	0
Sugar	0	0	0	0
Tomatoes	5	3	5	0
Whey water	1	6	1	2
Total points	100	100	100	100

(This game was devised by Ms. Santosh Jain, Lecturer in Nutrition in the Institute of Home Economics, New Delhi, and has been reproduced from an old issue of Home Science magazine.)

The Sayings Of Kahlil Gibran

TEACHER

Whoever would be a teacher of men let him begin by teaching himself before teaching others; and let him teach by example before teaching by word. For he who teaches himself and rectifies his own ways is more deserving of respect and reverence than he who would teach others and rectify their ways.

ACTION

A little knowledge that acts is worth infinitely more than much knowledge that is idle.

ADVICE

He who does not seek advice is a fool. His folly blinds him to Truth and makes him evil, stubborn and a danger to his fellow man.

AFFECTION

The heart's affections are divided like the branches of the cedar tree; if the tree loses one strong branch, it will suffer but it does not die. It will pour all its vitality into the next branch so that it will grow and fill the empty place.

CHILDHOOD

The things which the child loves remain in the domain of the heart until old age. The most beautiful thing in life is that our souls remain hovering over the places where we once enjoyed ourselves.

PERPLEXITY

Perplexity is the beginning of knowledge

SOUNDS OF NATURE

When the birds sing, do they call to the flowers in the fields, or are they speaking to the trees, or are they echoing the murmur of the brooks? For man and his understanding cannot know what the bird is saying, nor what the brook is murmuring, nor what the waves whisper when they touch the beaches slowly and gently.

Man with his understanding cannot know what the rain is saying when it falls upon the leaves of the trees or when it taps at the window panes. He cannot know what the breeze is saying to the flowers in the fields.

But the Heart of Man can feel and grasp the meaning of these sounds that play upon his feelings. Eternal Wisdom often speaks to him in a mysterious language; Soul and Nature converse together, while Man stands speechless and bewildered.

Yet has not Man wept at the sounds? And are not his tears eloquent understanding?

UNSEEN

The subtlest beauties in our life are unseen and unheard.

WISDOM

Keep me away from the wisdom which does not cry, the philosophy which does not laugh and the greatness which does not bow before children.

WORDS

Wisdom is not in words;

Wisdom is meaning within words